

### **REMARKS**

With the present Amendment, claims 1-8, 13, 20, 43 and 53 are pending in the present application. The rejections under 35 U.S.C. 103 are respectfully traversed. However, in order to further the prosecution of this application, independent claims 1 and 20 have been amended in order to further distinguish them from the cited art. Claim 10 is canceled. Support for the claim amendments can be found in the specification and drawings, in particular in paragraphs 0005-0007, 0060-0067, 0089, 0164-0176, 0194-0213, 0215-0219, 0226-0230, 0260-0271, 0273-0284. No new matter has been added. Applicants believe that the present application as amended is now in condition for allowance of which prompt and favorable action is respectfully requested.

#### **35 U.S. C. 103 Rejections**

Claims 1, 2, 4, 5 and 20 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 2002/0088005 A1) in view of Thomas et al. (US 6,987,819) and Ling et al. (US 6,377,607). Dependent claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 2002/0088005 A1) in view of Thomas et al. (US 6,987,819) and Ling et al. (US 6,377,607) as applied to claim 1, and further in view of Kadous et al. (US 2003/0165189 A1). Dependent claim 6 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 2002/0088005 A1) in view of Thomas et al. (US 6,987,819) and Ling et al. (US 6,377,607) as applied to claim 1, and further in view of Onggosanusi et al. (US 2003/0210750 A1). Dependent claims 7, 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US 2002/0088005 A1) in view of Thomas et al. (US 6,987,819) and Ling et al. (US 6,377,607) as applied to claim 1, and further in view of Kasapi et al. (US 2006/0099955 A1). Dependent claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (US

2002/0088005 A1) in view of Thomas et al. (US 6,987,819) and Ling et al. (US 6,377,607) as applied to claim 1, and further in view of Catreux et al. (US 2006/0029146 A1).

The MPEP recited the standard to be applied in an issue of obviousness under 35 USC 103. Section 2143.03 of the MPEP states in part:

**ALL CLAIM LIMITATIONS MUST BE CONSIDERED**

"All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under **35 U.S.C. 103**, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

As amended, independent claims 1 and 20 recite the elements of combining the first plurality of symbol substreams with the second plurality of symbol substreams using “a superposition scheme” by “scaling the first plurality of symbol substreams that are hierarchically coded with a first scaling factor to obtain a first plurality of scaled symbol substreams, scaling the second plurality of symbol substreams that are hierarchically coded with a second scaling factor to obtain a second plurality of scaled symbol substreams, and summing the first plurality of scaled symbol substreams with the second plurality of scaled symbol substreams to obtain the plurality of transmit symbol streams.” These recited elements are not disclosed in Wu, Thomas or Ling, either separately or in combination.

As stated in the Office Action on page 3, “Wu et al. fails to disclose ....combining the first plurality of symbol substreams with the second plurality of symbol substreams....” Also, as stated in the Office Action on page 4, although Thomas shows the combining of the first plurality of symbol substreams with the second plurality of symbol substreams in Figure 3A with transmit combiner 3A03, details of how the combining is done, as they are recited in the present amended independent claims 1 and 20, are not disclosed. The Office Action, on page 5, further cites to Ling to illustrate the details of combining. As stated in the Office Action on page 5,

“Ling et al. discloses a time division combiner (combiner 16 in figure 1) that mixes the input signals in accordance with conventional time division combining methods.” As recited, the amended independent claims recite a superposition scheme and not the time division combining method disclosed in Ling. Additionally, the amended independent claims recite the element of scaling symbol substreams that are hierarchically coded which are not disclosed in Wu, Thomas or Ling.

Additionally, the cited secondary references (Kadous, Kasapi, Onggosanusi, Catreux) do not make up for these deficiencies contrary to the assertions in the present Office Action. Kadous discloses a MIMO system and was cited for its disclosure of spatial processing. Kasapi was cited for its disclosure of channel assignment in spatial multiplexing systems. Onggosanusi was cited for its disclosure of space time transmit diversity. Kadous, Kasapi and Onggosanusi, either separately or in combination with the cited references, do not disclose the recited elements of a superposition scheme for scaling symbol substreams that are hierarchically coded.

Contrary to the assertion in the Office Action on page 11, although Catreux discloses a weighting and combining arrangement, the disclosure in Catreux relates to weighting signals from different antennas for beam formation. Catreux does not disclose the recited element of a superposition scheme for scaling symbol substreams that are hierarchically coded.

“In this case the signal provided by each of M ( $M > N$ ) antennas of a receiver is passed through a low noise amplifier and then split, weighted and combined in the RF domain with the signals from the other antennas of the receiver. This forms N RF output signals, which are then passed through N RF chains.” *Catreux et al. (US 2006/0029146 A1), paragraph 0025. Emphasis added.*

Although Wu mentions hierarchical coding in passing in paragraphs 0005 and 0059, there is no motivation to combine this disclosure of Wu with the disclosure of Catreux. Catreux discloses combining weighted signals from different antennas for beam formation in the RF domain. On the other hand, Wu’s mention of hierarchical coding is for “data streams” which are

well known to be in the baseband domain not in the RF domain. Thus, it would not be obvious for one skilled in the art to combine the disclosure of Wu with the disclosure of Catreux.

In view of the remarks made above, none of the cited references, either separately or in combination, disclose the recited elements of “a superposition scheme for scaling the first plurality of symbol substreams that are hierarchically coded with a first scaling factor to obtain a first plurality of scaled symbol substreams, scaling the second plurality of symbol substreams that are hierarchically coded with a second scaling factor to obtain a second plurality of scaled symbol substreams, and summing the first plurality of scaled symbol substreams with the second plurality of scaled symbol substreams to obtain the plurality of transmit symbol streams.” Thus, a prima facie case of obviousness is not supported, and withdrawal of the 103 rejections are respectfully requested.

With respect to the rejected dependent claims, which respectively depend from either independent claims 1 or 20, these dependent claims are believed to be allowable based on their dependencies, as well as on their merits.

### **CONCLUSION**

For the reasons stated above, the prior art references cited by the Examiner do not disclose, teach, suggest or make obvious the pending claims. Thus, Applicants respectfully request withdrawal of the 35 U.S.C.103 rejections based thereon.

### **Request For Allowance**

In view of the foregoing, Applicants submit that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited.

Please charge any additional fees or credit any overpayments that may be due with this response to Deposit Account No. 170026.

Respectfully submitted,

Dated January 15, 2009

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